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WHAT IS CLAIMED IS:

1. A composition comprising a target nucleic acid associated with a product of an enzyme and a chromogen composition in an individual cell.

2. The composition according to claim 1 wherein the enzyme is a phosphatase or a peroxidase.

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3. The composition according to claim 1 wherein the chromogen is NBT/BCIP, tetramethylbenzidine or diaminobenzidine.

4. The composition according to claim 1 wherein the enzyme is alkaline phosphatase and the chromogen is NBT/BCIP.

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5. The composition according to claim 1 wherein said product is located at each of a plurality of occurrences of a particular nucleic acid sequence and each of said target nucleic acid associated with product is separate from each other.

6. The composition according to claim 1 further comprising a nucleic acid probe hybridized to said target wherein said enzyme is bound to said probe.

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7. The composition according to claim 6 wherein said probe is indirectly bound to said enzyme.

8. A method of detecting a target nucleic acid sequence comprising observing the location of a product of an enzyme and a chromogen composition, the product being associated with the target nucleic acid sequence in an individual cell.

5                   9.     The method according to claim 8 further comprising counting the number of individual spots created by the product inside the individual cell.

                  10.    The method according to claim 9 wherein each individual spot correlates to the location of each copy of the target nucleic acid sequence being detected.

10               11.    The method according to claim 8 wherein the enzyme is a phosphatase or an oxidase.

                  12.    The method according to claim 8 wherein the chromogen is NBT/BCIP, tetramethylbenzidine or diaminobenzidine.

                  13.    The method according to claim 8 wherein the enzyme is alkaline phosphatase and the chromogen is NBT/BCIP.

15               14.    The method according to claim 8 further comprising a nucleic acid probe bound to the enzyme wherein said probe is hybridized to said nucleic acid sequence.

                  15.    A method of determining the number of copies of a target nucleic acid sequence in a cell comprising;

                  adding a labeled nucleic acid probe to a tissue sample,

20               incubating the probe and the sample under hybridizing conditions for a sufficient time for the probe to hybridize to the sample at each copy of the target nucleic acid sequence,

                  adding a chromogen substrate, and

25               observing the location of a product of an enzyme and a chromogen composition, the product being associated with the target nucleic acid sequence in an individual cell,

                  wherein the enzyme is attached to the labeled nucleic acid probe prior to adding the chromogen substrate.

17. The method according to claim 15 wherein the enzyme is a phosphatase or an oxidase.

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